

1. A pharmaceutical composition comprising a drug that regulates the function of a JTT-1 antigen.

2. The pharmaceutical composition of claim 1, wherein  
5 the drug is a low molecular weight compound.

3. The pharmaceutical composition of claim 1, wherein the drug is an antisense substance.

10 4. The pharmaceutical composition of claim 1, wherein the drug is a polypeptide.

5. The pharmaceutical composition of claim 1, wherein the pharmaceutical composition activates or stimulates the  
15 function of the JTT-1 antigen.

6. The pharmaceutical composition of claim 5, wherein the drug is a low molecular weight compound.

20 7. The pharmaceutical composition of claim 1, wherein the pharmaceutical composition inhibits or suppresses the function of the JTT-1 antigen.

8. The pharmaceutical composition of claim 7, wherein  
25 the drug is a low molecular weight compound.

9. The pharmaceutical composition of claim 1, wherein the pharmaceutical composition is effective at treating or preventing an autoimmune disease, an allergic disease, or  
30 an inflammatory disease.

10. The pharmaceutical composition of claim 9, wherein the drug is a low molecular weight compound.

11. The pharmaceutical composition of claim 1,  
5 wherein the JTT-1 antigen is a human JTT-1 antigen.

12. The pharmaceutical composition of claim 1,  
wherein the JTT-1 antigen comprises the amino acid sequence  
of SEQ ID NO:2.

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13. The pharmaceutical composition of claim 12,  
wherein the JTT-1 antigen consists of the amino acid  
sequence of SEQ ID NO:2.

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14. The pharmaceutical composition of claim 13,  
wherein the drug is a low molecular weight compound.

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15. The pharmaceutical composition of claim 14,  
wherein the pharmaceutical composition inhibits or  
suppresses the function of the JTT-1 antigen.

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16. The pharmaceutical composition of claim 1,  
wherein the JTT-1 antigen comprises the amino acid sequence  
of SEQ ID NO:2 in which one to ten amino acids are  
substituted, deleted or added, and wherein

(a) the JTT-1 antigen comprises the amino acid  
sequence Phe-Asp-Pro-Pro-Pro-Phe (SEQ ID NO:21) in its  
extracellular region,

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(b) the JTT-1 antigen comprises the amino acid  
sequence Tyr-Met-Phe-Met (SEQ ID NO:22) in its cytoplasmic  
region, and

(c) an antibody reactive with the JTT-1 antigen induces proliferation of peripheral blood lymphocytes in the presence of an antibody reactive with CD3.

5        17. The pharmaceutical composition of claim 16, wherein the drug is a low molecular weight compound.

10        18. A method of treating a disease selected from the group consisting of an autoimmune disease, an allergic disease, or an inflammatory disease in a subject, the method comprising administering to the subject an effective amount of the pharmaceutical composition of claim 1.

15        19. The method of claim 18, wherein the disease is an autoimmune disease.

20        20. The method of claim 18, wherein the disease is an allergic disease.

25        21. The method of claim 18, wherein the disease is an inflammatory disease.

30        22. The method of claim 18, wherein the disease is rheumatoid arthritis, multiple sclerosis, autoimmune thyroiditis, allergic contact dermatitis, chronic inflammatory dermatosis, systemic lupus erythematosus, insulin dependent diabetes mellitus, or psoriasis.

35        23. The method of claim 18, wherein the drug is a low molecular weight compound.

24. The method of claim 18, wherein the drug is an antisense substance.

25. The method of claim 18, wherein the drug is a  
5 polypeptide.

26. The method of claim 18, wherein the drug is an antibody.

10 27. The method of claim 18, wherein the pharmaceutical composition activates or stimulates the function of the JTT-1 antigen.

28. The method of claim 27, wherein the drug is a low  
15 molecular weight compound.

29. The method of claim 18, wherein the pharmaceutical composition inhibits or suppresses the function of the JTT-1 antigen.

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30. The method of claim 29, wherein the drug is a low molecular weight compound.

31. The method of claim 18, wherein the JTT-1 antigen  
25 is a human JTT-1 antigen.

32. The method of claim 18, wherein the JTT-1 antigen comprises the amino acid sequence of SEQ ID NO:2.

30 33. The method of claim 32, wherein the JTT-1 antigen consists of the amino acid sequence of SEQ ID NO:2.

34. The method of claim 33, wherein the drug is a low molecular weight compound.

35. The method of claim 34, wherein the pharmaceutical  
5 composition inhibits or suppresses the function of the JTT-1 antigen.

36. The method of claim 18, wherein the JTT-1 antigen comprises the amino acid sequence of SEQ ID NO:2 in which  
10 one to ten amino acids are substituted, deleted or added, and wherein

(a) the JTT-1 antigen comprises the amino acid sequence Phe-Asp-Pro-Pro-Pro-Phe (SEQ ID NO:21) in its extracellular region,

15 (b) the JTT-1 antigen comprises the amino acid sequence Tyr-Met-Phe-Met (SEQ ID NO:22) in its cytoplasmic region, and

(c) an antibody reactive with the JTT-1 antigen induces proliferation of peripheral blood lymphocytes in  
20 the presence of an antibody reactive with CD3.

37. The method of claim 36, wherein the drug is a low molecular weight compound.

25 38. A method of identifying a substance that regulates JTT-1 antigen function, the method comprising:

providing a transgenic mouse transgenic for human JTT-1 antigen;

administering a test substance to the mouse; and

30 determining whether the test substance regulates the function of human JTT-1 antigen.

39. The method of claim 38, wherein the test substance is a low molecular weight compound.

40. The method of claim 38, wherein the test  
5 substance is an antisense substance.

41. The method of claim 38, wherein the test substance is a polypeptide.

10 42. The method of claim 38, wherein the test substance is an antibody.

43. The method of claim 38, wherein the determining step determines whether the test substance activates or  
15 stimulates the function of the JTT-1 antigen.

44. The method of claim 43, wherein the test substance is a low molecular weight compound.

20 45. The method of claim 38, wherein the determining step determines whether the test substance inhibits or suppresses the function of the JTT-1 antigen.

46. The method of claim 45, wherein the test substance  
25 is a low molecular weight compound.

47. The method of claim 38, wherein the human JTT-1 antigen comprises the amino acid sequence of SEQ ID NO:2.

30 48. The method of claim 47, wherein the human JTT-1 antigen consists of the amino acid sequence of SEQ ID NO:2.

49. The method of claim 48, wherein the test substance is a low molecular weight compound.

50. The method of claim 49, wherein the determining  
5 step determines whether the test substance inhibits or suppresses the function of the JTT-1 antigen.

51. The method of claim 38, wherein the human JTT-1 antigen comprises the amino acid sequence of SEQ ID NO:2 in  
10 which one to ten amino acids are substituted, deleted or added, and wherein

(a) the human JTT-1 antigen comprises the amino acid sequence Phe-Asp-Pro-Pro-Pro-Phe (SEQ ID NO:21) in its extracellular region,

15 (b) the human JTT-1 antigen comprises the amino acid sequence Tyr-Met-Phe-Met (SEQ ID NO:22) in its cytoplasmic region, and

(c) an antibody reactive with the human JTT-1 antigen induces proliferation of peripheral blood lymphocytes in  
20 the presence of an antibody reactive with CD3.

52. The method of claim 51, wherein the test substance is a low molecular weight compound.

25 53. A method of identifying a substance that regulates JTT-1 antigen function, the method comprising:

providing a purified polypeptide comprising the extracellular domain of a JTT-1 antigen;

contacting the polypeptide with a test substance; and

30 determining whether the test substance interacts with the polypeptide, wherein such interaction indicates that

the test substance is a potential regulator of JTT-1 antigen.

54. The method of claim 53, wherein the polypeptide  
5 is a fusion protein.

55. The method of claim 54, wherein the fusion protein comprises a portion of a constant region of an immunoglobulin heavy chain.

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56. The method of claim 53, wherein the extracellular region is amino acid residues 1-140 of SEQ ID NO:2.

57. The method of claim 53, wherein the test  
15 substance is a low molecular weight compound.

58. The method of claim 53, wherein the test substance is a polypeptide.

20 59. The method of claim 53, wherein the test substance is an antibody.

60. The method of claim 53, wherein the test substance activates or stimulates the function of the JTT-1 antigen.

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61. The method of claim 60, wherein the test substance is a low molecular weight compound.

62. The method of claim 53, wherein the test substance  
30 inhibits or suppresses the function of the JTT-1 antigen.



63. The method of claim 62, wherein the test substance is a low molecular weight compound.

64. The method of claim 53, wherein the human JTT-1 antigen comprises the amino acid sequence of SEQ ID NO:2.

65. The method of claim 64, wherein the human JTT-1 antigen consists of the amino acid sequence of SEQ ID NO:2.

66. The method of claim 65, wherein the test substance is a low molecular weight compound.

67. The method of claim 66, wherein the test substance inhibits or suppresses the function of the JTT-1 antigen.

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68. The method of claim 53, wherein the human JTT-1 antigen comprises the amino acid sequence of SEQ ID NO:2 in which one to ten amino acids are substituted, deleted or added, and wherein

(a) the human JTT-1 antigen comprises the amino acid sequence Phe-Asp-Pro-Pro-Pro-Phe (SEQ ID NO:21) in its extracellular region,

(b) the human JTT-1 antigen comprises the amino acid sequence Tyr-Met-Phe-Met (SEQ ID NO:22) in its cytoplasmic region, and

(c) an antibody reactive with the human JTT-1 antigen induces proliferation of peripheral blood lymphocytes in the presence of an antibody reactive with CD3.

69. The method of claim 68, wherein the test substance is a low molecular weight compound.